IMPROVING THE QUALITY AND QUANTITY OF SLEEP FOR THE INTENSIVE CARE PATIENT

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Certificate of authorship/originality

I certify that the work in this thesis has not been previously submitted for a degree nor has it been submitted as part of the requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help I have received in my research work and in the preparation of this thesis has been acknowledged. In addition, I certify that all the information sources and literature used are indicated in the thesis.

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Signature of candidate

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Abstract

Patients in intensive care units (ICUs) frequently experience sleep disruption. Few recent sleep studies using polysomnography (PSG) conducted in ICU are available. Interventional studies to improve sleep in ICU are rare and PSG is infrequently used to evaluate interventions designed to improve sleep in ICU.

The primary aim of the study was to explore ICU patients' quality and quantity of sleep, using 24-hour PSG recording, patient self-report and nurse nocturnal observation. Secondary aims included an assessment of 24-hour sound and illuminance levels; self-reported sleep quality on the Ward and at home two months after discharge from hospital; patients' psychological well-being at home two months after discharge from hospital; and the effect of the introduction of a 'rest and sleep' guideline.

An exploratory approach was taken in this quasi-experimental study. Thirty patients completed 24-hour PSG sleep recording before the introduction of the Guideline and 23 patients after. The Guideline was developed using a consultative approach in which research evidence and suggestions from ICU health care personnel were incorporated. Audits were conducted in the postintervention phase to assess guideline adoption.

The sample comprised 70% men and the mean age was 58 years. Diagnoses were mainly nonoperative (66%). Fifty-four percent received mechanical ventilation during PSG recording. Median duration of mechanical ventilation was six days and median length of ICU stay was 12 days.

Median total sleep time was five hours. The majority of sleep was stage 1 and 2. There was significant sleep fragmentation (median duration of sleep without waking: 3:15 min:sec). Forty-four per cent of sleep was during the day. There were concerns about the interrater reliability of the PSG data analysis using the Rechtshaffen and Kales criteria (Kappa values: 0.56 and 0.51). Patients' self-reported sleep in ICU using the Richards Campbell Sleep Questionnaire was poor (mean: 51 mm). Nurses' estimations of nocturnal

sleep were higher than the PSG derived value. Sound levels exceeded international standards for hospitals. Night-time illuminance levels were appropriately low. The introduction of the Guideline did not appear to result in an improvement in sleep however Guideline uptake was limited.

This investigation revealed the need for alternative methods of analysing ICU patients' PSG data. The study protocol demonstrates the feasibility of conducting further extensive investigations into potential relationships between patients' sleep disruption and outcomes. The method in which the Guideline was developed may be of interest to other clinicians wishing to develop guidelines when research evidence is limited.